THERMO KING

Installation Manual

TracKing™ Cellular For Thermo King Truck Units

TK 56186-11-IM (Rev. 0, 07/15)

Ingersoll Rand

Installation Manual

TracKing™ Cellular
For Thermo King Truck Units

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TracKing Cellular

Release History

Released	(07/15)

Introduction

This manual was written to assist with the installation of a **Thermo King TracKing Cellular** components onto a Thermo King truck unit. Due to its complexity, you should not attempt this installation unless you:

- Are an experienced mechanic.
- Can safely lift 34 kilos (75 lbs.)
- Are certified or trained in the repair and maintenance of mobile air conditioning systems.
- Have a basic understanding of electricity and electrical wiring.
- Have the necessary tools and equipment to complete the installation
- Have a vehicle designed, built or modified to meet the requirements of this installation.

This manual is published for informational purposes only. Thermo King makes no representations warranties express or implied, with respect to the information recommendations and descriptions contained herein. Information provided should not be regarded as all-inclusive or covering all contingencies. If further information is required, Thermo King Corporation Service Department should be consulted.

Thermo King's warranty shall not apply to any equipment which has been "so installed, maintained, repaired or altered as, in the manufacturer's judgment, to affect its integrity."

Manufacturer shall have no liability to any person or entity for any personal injury, property damage or any other direct, indirect, special, or consequential damages whatsoever, arising out of the use of this manual or any information, recommendations or descriptions contained herein.

Table of Contents

Safety Precautions 5
FCC STATEMENT 6
Installation Tips 7
Truck Units Step 1 - Datalogger Configuration 8
Truck Units Step 2 - Antenna Installation 10
Truck Units Step 3 - TracKing Module Installation 12
Truck Units Step 3a - TracKing Module and Harness Installation 14
Truck Units Step 4 - TracKing Harness Installation 16
TracKing Verification Procedures 18

Safety Precautions

The ⚠ symbol appears next to a point that is particularly important:

⚠ ***DANGER: Addresses a circumstance that, if encountered, will lead to death or serious injury***

⚠ ***WARNING: Addresses a circumstance that, if encountered, might lead to death or serious injury.***

⚠ ***CAUTION: Addresses a circumstance that, if encountered, may cause damage to equipment or minor injury.***

⚠ ***DANGER: Before servicing the unit, set all unit electrical controls to the OFF position and disconnect the negative (-) battery cable to prevent the unit from starting and causing serious injury.***

⚠ ***DANGER: Units equipped with electric standby must be disconnected from the electrical supply source to avoid possible electrical shock and to prevent the unit from starting and causing serious injury.***

⚠ ***WARNING: Always wear goggles or safety glasses while servicing the unit. Refrigerant liquid, refrigeration oil, and battery acid can permanently damage the eyes.***

⚠ ***WARNING: When using ladders to install or service refrigeration systems, always observe the ladder manufacturer's safety labels and warnings. A work platform is the recommended method when servicing the unit.***

⚠ ***WARNING: Keep your hands away from fans and belts when the unit is running.***

⚠ ***CAUTION: Make sure all mounting bolts are tight and are of correct length for their particular application***

⚠ ***CAUTION: When working with electronic circuits that contain microprocessors, always wear an electrostatic discharge (ESD) wrist strap. Connect the grounding clip to the chassis ground or CH terminal to prevent electrostatic discharge from damaging circuits.***

FCC STATEMENT

Statement According FCC part 15.19

FCC identifier has to be on the equipment

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Statement according FCC part 15.21

Modifications not expressly approved by Thermo King Corp. could void the user's authority to operate the equipment.

Statement according FCC part 15.105

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

RF Exposure

NOTE: The antenna of this device is installed on the top of a Thermo King refrigeration unit which is mounted in front of the trailer. The exposure to radio frequency is very minimal because the position of the truck driver and passenger, forward and below the antenna.

Health and Safety Information

Exposure to Radio Frequency (RF) Signals

This product is a radio transmitter and receiver. It is designed and manufactured not to exceed the emission limits for exposure to radio frequency (RF) energy set by the Federal Communications Commission of the U.S. Government. These limits are part of comprehensive guidelines and establish permitted levels of RF energy for the general population. The guidelines are based on standards that were developed by independent scientific organizations through periodic and thorough evaluation of scientific studies. The standards include a substantial safety margin designed to assure the safety of all persons, regardless of age and health.

Installation Tips

Antenna Installation

Install the antenna and bracket per the instructions for your particular unit.

- Be sure the washer is installed next to the nut as shown in the illustration on page 11.

Antenna Cable

Handle the antenna cable with care to prevent damage.

- Cable should be routed safely down the interior of the unit away from sharp edges and hot or rotating components.
- Secure cable adequately while allowing slack around corners.
- Avoid tight bends. Excess cable should be looped in a circle and secured with tie bands.
- Handle the antenna cable connectors with care to prevent damage.

TracKing Verification Procedures

See “TracKing Verification Procedures” on page 18.

Truck Units Step 1 - Datalogger Configuration

MD-200/300, TS-200/300/500/600 Spectrum TS with DAS

NOTE: You must have DAS before installing these components

Configuration Procedures

Before installing the TracKing Module and related components, use your WinTrac software and download the data from the TK datalogger.

1. Send a Text Header to the **DAS**. This will be used as a "marker" for the TracKing GPRS to download over the air (see example).

   To retrieve a user manual, go to **www.tktracking.com**, enter your username and password. Click on "User Guide" link in the upper right corner of your screen.

T-600/800/1000 with or without DAS

Configuration Procedures

Before installing the TracKing Module and related components, use your WinTrac software and download the data from the TK datalogger.

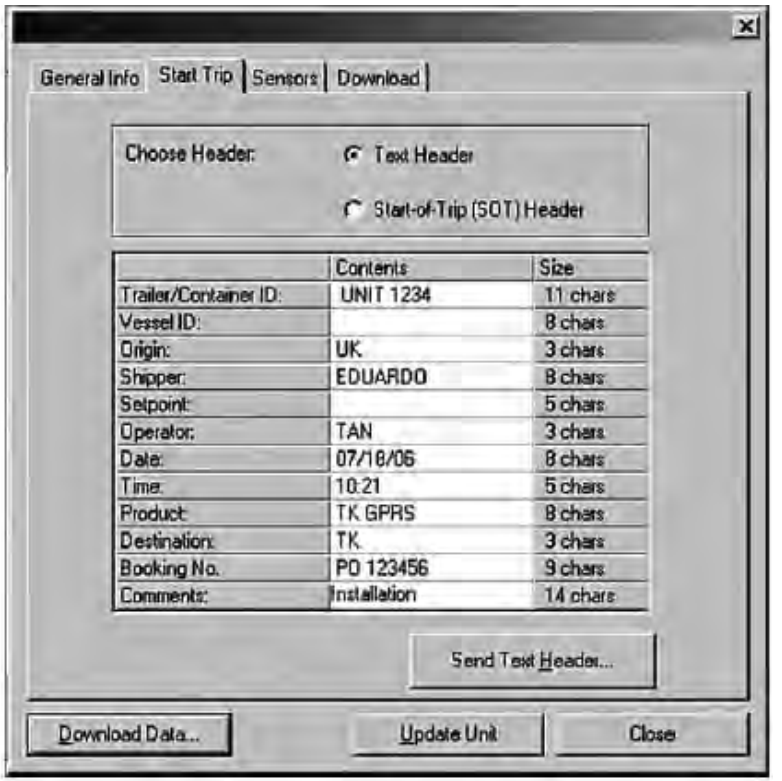
1. **With DAS:** Send a Text Header to DAS.

   Without DAS: Send a Text Header to SR-2 Service Watch.

2. If a DAS unit is present, send a text header to the DAS unit as well. This will be used as a "marker" for the TracKing GPRS to download over the air (see example).

   To retrieve a user manual, go to **www.tktracking.com**, enter your username and password. Click on "User Guide" link in the upper right corner of your screen.

Truck Units Step 1 - Datalogger Configuration



Text Header

Truck Units Step 2 - Antenna Installation

MD-200/300, TS-200/300/500/600 Spectrum TS with DAS

Antenna Installation and Cable Routing

1. Mount the antenna to the antenna bracket with the provided washer and nut and torque to 10 N•m (88 in-lbs.). The antenna is non-directional and can be mounted in any direction but it must have an unobstructed view of the sky.
2. Attach the antenna bracket to the front of the grille, the center hold down screw for the grille is an excellent location.
3. Route the antenna harness across the condenser section toward the control box securing the harness with bandwraps and clamps.

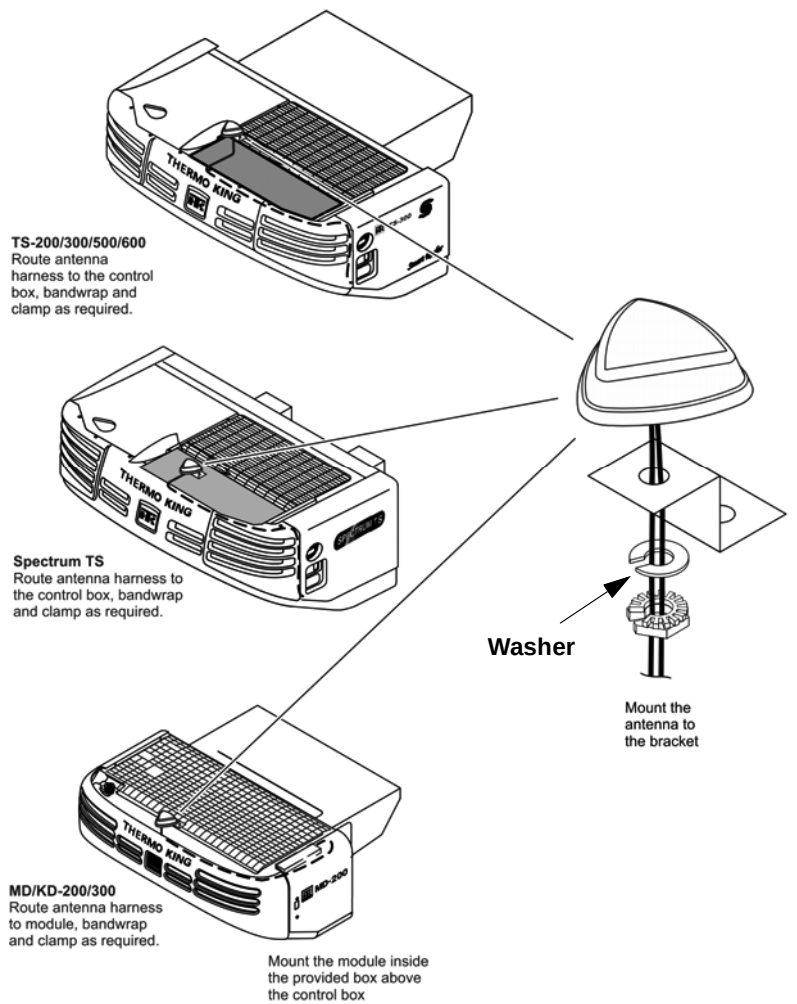
T-600/800/1000 with or without DAS

Antenna Installation and Cable Routing

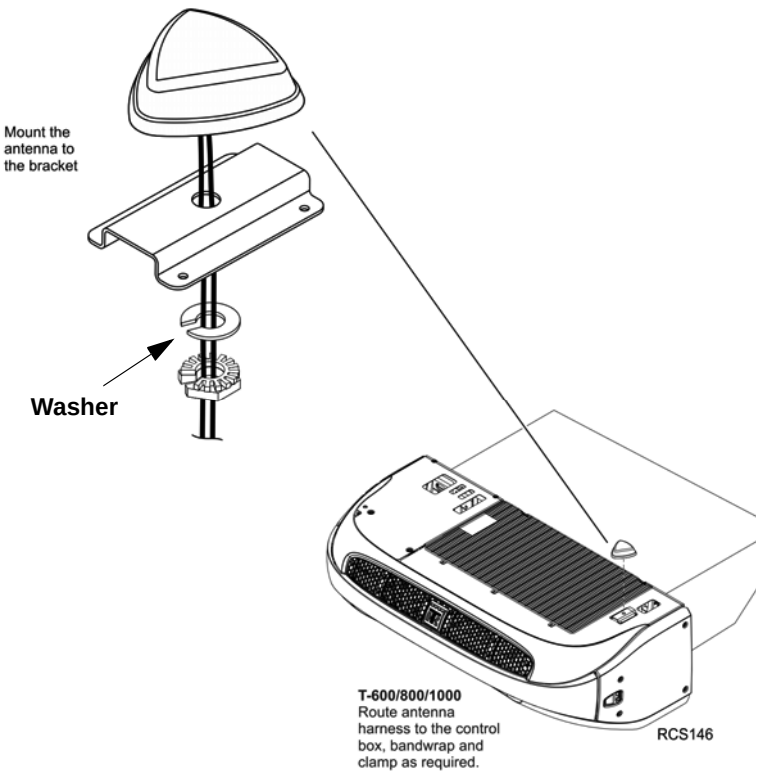
1. Mount the antenna to the antenna bracket with the provided nut and torque to 10 N•m (88 in-lbs.). The antenna is non-directional and can be mounted in any direction but it must have an unobstructed view of the sky.
2. Attach the antenna bracket to the unit frame with the supplied hardware. There are threaded inserts provided next to the dehydrator.
3. Insert the provided grommet into the hole in the unit frame in front of the antenna.
4. Route the antenna cable through the grommet, along the side of the control box and into the bottom of the box.
5. Remove the two bandwrap blocks on the right side of the control box, save the hardware.

Truck Units Step 2 - Antenna Installation

MD-200/300 and TS-200/300/500/600 Spectrum TS with DAS


THERMO KING
TS-200/300/500/600
Route antenna harness to the control box, bandwrap and clamp as required.
Spectrum TS
Route antenna harness to the control box, bandwrap and clamp as required.
Washer
Mount the antenna to the bracket
MD/KD-200/300
Route antenna harness to module, bandwrap and clamp as required.
Mount the module inside the provided box above the control box

T-600/800/1000 with or without DAS


Mount the antenna to the bracket
Washer
T-600/800/1000
Route antenna harness to the control box, bandwrap and clamp as required.
RCS146

Truck Units Step 3 - TracKing Module Installation

Installation Procedures

CAUTION: When working with electronic circuits that contain microprocessors, always wear an electrostatic discharge (ESD) wrist strap. Connect the grounding clip to the chassis ground or CH terminal to prevent electrostatic discharge from damaging circuits.

T-600/800/1000 with or without DAS

See “Truck Units Step 3a - TracKing Module and Harness Installation” on page 14.

MD200/300 - SEE DETAIL A

1. Attach the antenna cables to the TracKing module and torque to 1.4 N•m (12 in-lbs.).
2. Attach TracKing harness connector **B** to port B (5-pin) and tighten securely. **DO NOT attach the 7-pin connector until the TracKing harness has been spliced into the unit harness.**
3. Mount the module to the bracket with the provided hardware. Mount the assembly on top of the control box and secure to the frame with the provided hardware.
4. Route the harness into the control box through the harness grommet located in the bottom of the box.
5. See “Truck Units Step 4 - TracKing Harness Installation” on page 16.

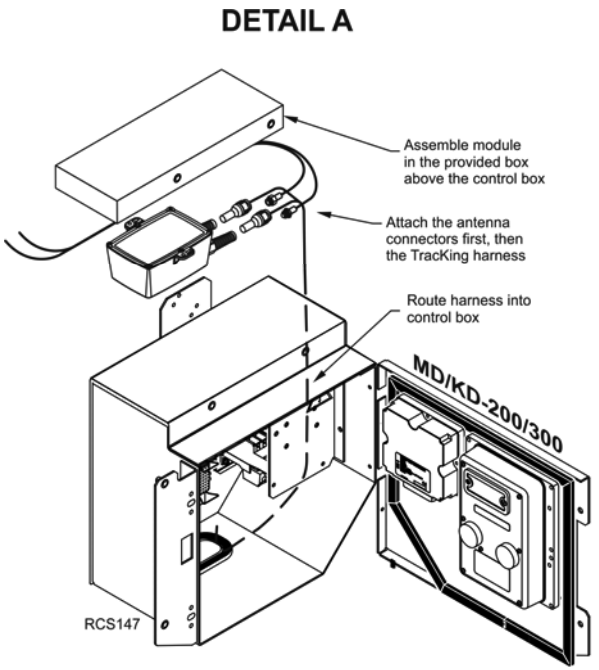
TS-200/300/500/600 - SEE DETAIL B

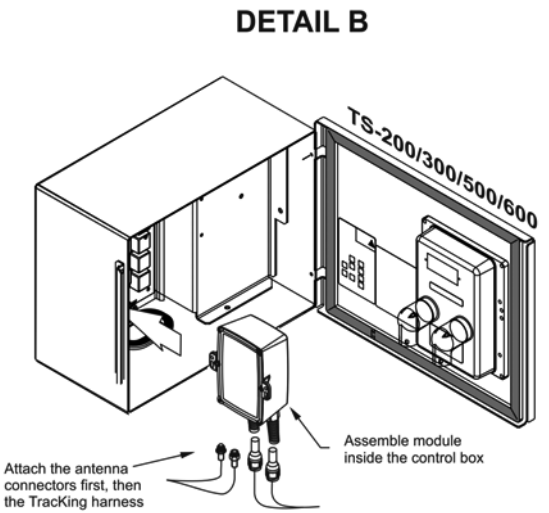
1. Route the antenna cables into the control box through the harness grommet located in the bottom of the box.
2. Using the module as a template, mark and drill the mounting holes in the control box side panel, beware of harness and tubing on the other side of the control box while drilling. Do not install the module yet.
3. Attach the antenna cables to the TracKing module and torque to 1.4 N•m (12 in-lbs.).
4. Attach TracKing harness connector **B** to port **B** (5-pin) and tighten securely. **DO NOT attach the 7-pin connector until the TracKing harness has been spliced into the unit harness.**
5. Mount the module with the provided hardware.
6. See “Truck Units Step 4 - TracKing Harness Installation” on page 16.

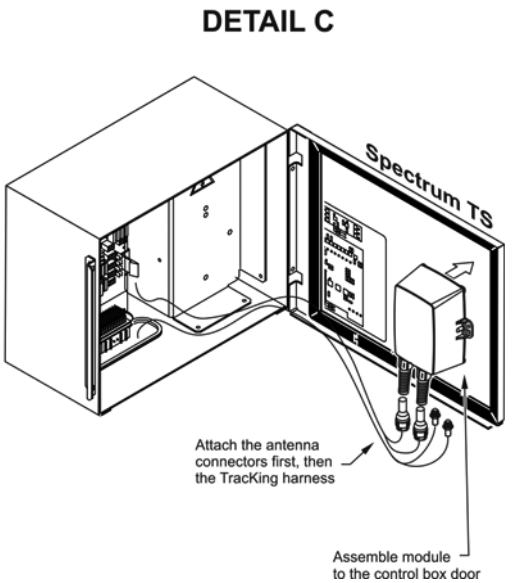
SPECTRUM TS - SEE DETAIL C

1. Route the antenna cables into the control box through the harness grommet located in the bottom of the box.
2. Using the module as a template, mark and drill the mounting holes in the control box door. Do not install the module yet.
3. Attach the antenna cables to the TracKing module and torque to 1.4 N•m (12 in-lbs.).
4. Mount the module with the provided hardware.
5. Attach TracKing harness connector **B** to port **B** (5-pin) and tighten securely. **DO NOT attach the 7-pin connector until the TracKing harness has been spliced into the unit harness.**
6. See “Truck Units Step 4 - TracKing Harness Installation” on page 16.

Truck Units Step 3 - TracKing Module Installation







Truck Units Step 3a - TracKing Module and Harness Installation

T-600/800/1000 with or without DAS

Installation Procedures

CAUTION: When working with electronic circuits that contain microprocessors, always wear an electrostatic discharge (ESD) wrist strap. Connect the grounding clip to the chassis ground or CH terminal to prevent electrostatic discharge from damaging circuits.

1. Attach the antenna cables to the TracKing module and torque to 1.4 N•m (12 in-lbs.).
2. Mount the TracKing module onto the bracket with the supplied hardware. Align the module and bracket over the bandwrap block holes, mark and drill the two remaining holes into the molded screw bosses of the control box. Use a 1/8" drill bit. Mount the module with the provided hardware and saved hardware, replace the band wrap blocks.
3. **Units with DAS**
   a. If there is a DAS unit present, remove the discard the DAS harness.
   b. Attach the TracKing harness to the DAS Connections.

   Units without DAS
   a. Tie back the unused DAS connectors securely with bandwraps.
4. Plug the 8-pin connector to the mating connector into **J12 CAN1** position. If there is a connector in the **J12** position, move that connector to **J13 CAN2** position.
5. Plug the 4-pin harness connector into **J9 RS232-1** position. If there is a connector in the J9 position, move that connector to **J10 RS232-1** position.
6. Rout the ground wire through the bottom of the control box and attach it to the frame ground located under the control box. **DO NOT USE THE SR-2 CIRCUIT BOARD GROUND STUD.**
7. Attach the TracKing harness 5-pin connector **B** to the port **B**.

Power Cycle and Setup Procedures

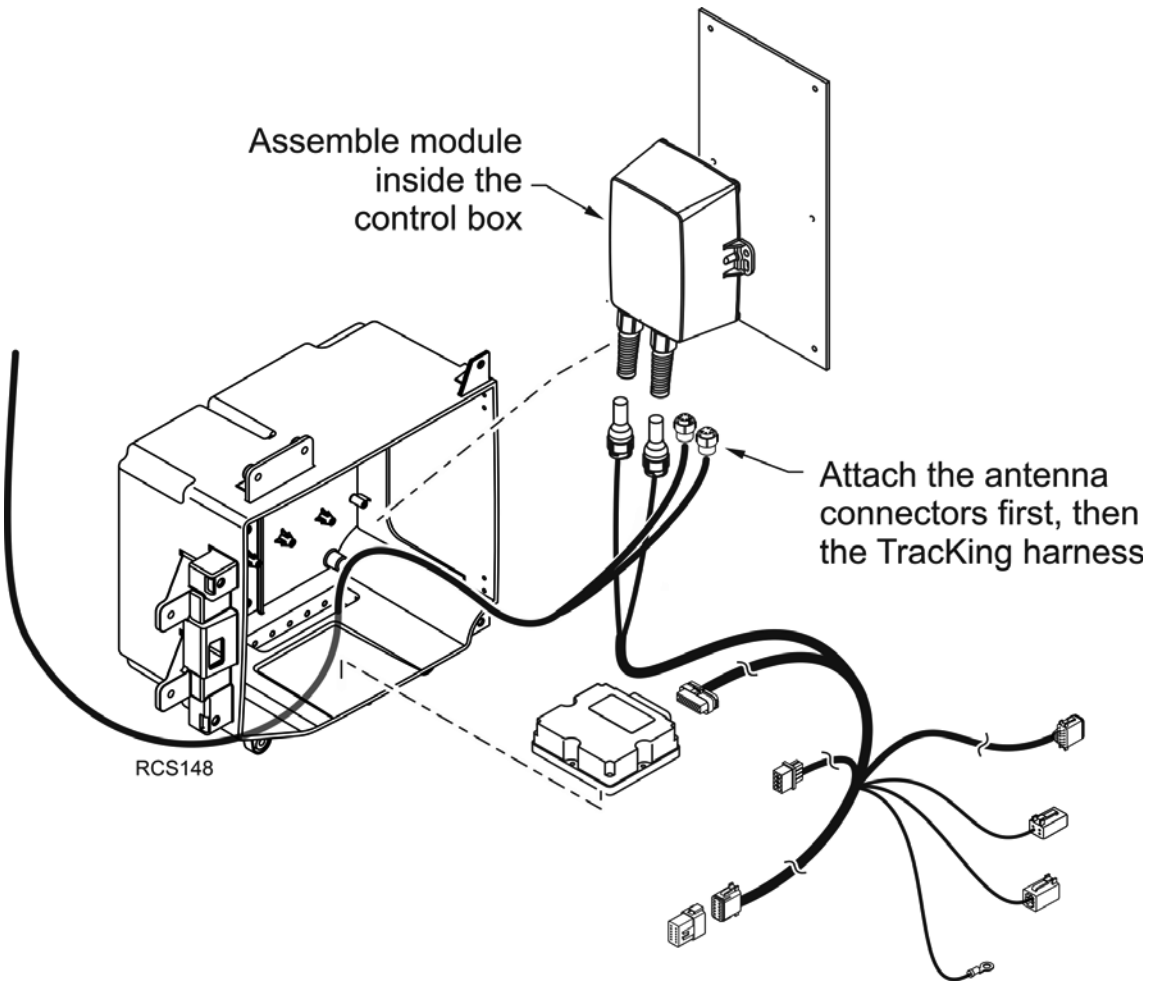
1. Reconnect the negative battery cable:
   - Turn on the unit **and then** attach the TracKing harness 7-pin connector **A** to port **A** module. Connecting in this order will provide a power cycle of the GPRS module aiding in quick connection of the TracKing GPRS system.

TracKing Verification Procedures

See “TracKing Verification Procedures” on page 18.

Truck Units Step 3a - TracKing Module and Harness Installation

T-600/800/1000 with or without DAS



Truck Units Step 4 - TracKing Harness Installation

MD200/300, TS200/300/500/600, SPECTRUM TS

Installation Procedures

NOTE: The TracKing harness is 1.5 meters long. Cut off excess wire length.

1. Locate the DAS 35-pin connector and remove it from the DAS module.
2. Splice the following wires using the supplied hardware:

DAS Receptacle Pin Position	TracKing Harness
31 (RED / RXD3)	TXA
32 (BLK / TXD3)	RXA
33 (CCOM)	GND
35 (8A / 8F)	Control Pwr 8

3. Add Xwake wire to the DAS harness in position 28. If there is a wire present, splice Xwake with this wire. If there is no wire present, add the provided terminal and insert into location 28 and reassemble.
4. Tape off the **TXB** and **RXB** wires on the TracKing harness.
5. Connect the second ground **(GND)** wire to the ground terminal in the control box.
6. Connect the power wire **(2S)** to the 2 terminal (direct battery power, position 5) on the interface board.

NOTE: The TracKing harness (2s wire) is protected by a 3 amp fuse.

7. Secure excess harnesses and cables with bandwraps.

Power Cycle and Setup Procedures

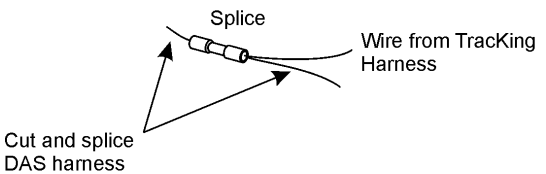
1. Reconnect the negative battery cable:
   - Turn on the unit **and then** attach the TracKing harness 7-pin connector **A** to GPRS module port **A**. Connecting in this order will provide a power cycle of the GPRS module aiding in quick connection of the TracKing GPRS system.

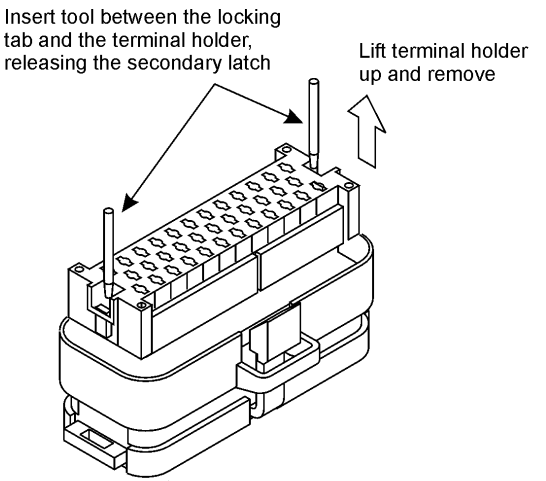
TracKing Verification Procedures

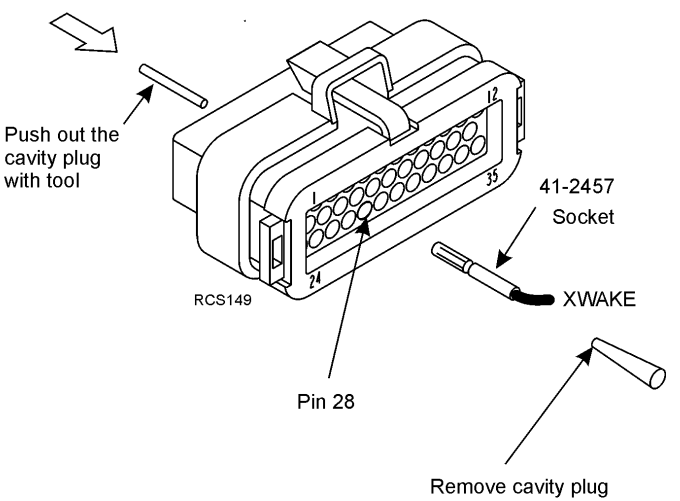
See “TracKing Verification Procedures” on page 18.

Truck Units Step 4 - TracKing Harness Installation

MD200/300, TS200/300/500/600, SPECTRUM TS




Insert tool between the locking tab and the terminal holder, releasing the secondary latch
Lift terminal holder up and remove



TracKing Verification Procedures

Checking the Installation

1. Login to the TracKing new unit install site using a TracKing supported browser (Internet Explorer 10 or 11, Mozilla Firefox or Google Chrome).
   a. Website: www.tktracking.com
   b. Enter username: newunit1@thermoking.com
   c. Password: Newunit1 **(Case Sensitive - Must use upper case N)**
   d. Click Enter Site to load new unit install fleet.

TracKing Verification Procedures (continued)

2. To find a unit:
   a. Once logged in, click on vertical blue bar to open Vehicle Selection Window.

   b. Type in unit GSM/mobile number in search field and hit enter or click on the search icon.

TracKing Verification Procedures (continued)

c. Place a check mark in the box of the highlighted GSM/Mobile number and then click the confirm Tracking List icon.

3. This will update the TracKing list and show the selected vehicle.
4. Verify TracKing unit operation.

NOTE: If needed, see REB Diagnostic Manual 55065 for further diagnosing details.

a. Always check for current Date/Time reading first. If the unit is reporting correctly, the unit should show a report within the last hour. If not reporting check the GSM connections.

b. The Last Known Position column should show the unit location. If the position states No Satellite Coverage, the GPS antenna is not reading the GPS satellites. Check connections or if in a building.

c. When the Reefer unit Power is ON you should be able to read Set point (SP1) and Return Air (RA1) readings. Along with mode and engine hours. If you do not see this information the TracKing device is most likely not reading the controller.

d. Do a manual set point change to cause an event message to be sent. You should be able to see the data change.

e. The Port A and Port B columns should report and show the connected to device and software version on most applications.

TracKing Verification Procedures (continued)

5. Once unit has been verified, complete the Activation/Deactivation form located on InfoCentral and email to trackingactivations@thermoking.com

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Ingersoll Rand's Climate Solutions sector delivers energy-efficient HVACR solutions for customers globally. Its world class brands include Thermo King, the leader in transport temperature control and Trane, a provider of energy efficient heating, ventilating and air conditioning systems, building and contracting services, parts support and advanced controls for commercial buildings and homes.

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